

Career and Technical Education Today

 By Stephen DeWitt

PREVIEW Current career and technical education (CTE) efforts at the state and federal levels tie CTE to academic improvement and accountability.

CTE programs can use career clusters and dual and concurrent enrollment to establish secondary-postsecondary links.

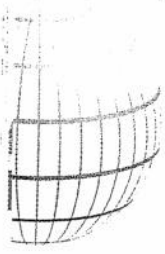
Students can learn "soft skills" in CTE programs that will make them marketable employees after graduation.

What do you think of when you hear the phrase *career and technical education*? Do you think of a system that engages and motivates students to stay in school by integrating the foundation of academic learning with practical skills training? Do you think of a responsive and flexible education system that directly addresses globalization and current business and industry needs? Do you think of multiple pathways and innovative approaches to education delivery that begin in the middle level or high school years and continue throughout a lifetime?

Career and technical education (CTE) is all of these things. It meets the challenges of a diverse and evolving workforce just as vocational education did when it was conceived at the beginning of the 20th century as a response to the industrial age. But CTE has evolved to meet the new challenges of the 21st century, often leading school reform and improvement efforts at the secondary and postsecondary levels, and effectively addresses international competitiveness concerns through secondary-postsecondary-workforce links.

Improving Academic Performance

The lines between academic study and career and technical skills training are blurring. State and national leaders are beginning to recognize the transformational potential that CTE offers for such issues as secondary-postsecondary transitions, remediation, and the drop-out problem. At the national level, the National Governors Association, Achieve, the National Association of State Boards of Education, and other organizations have initiated new projects within the last few years that focus on CTE and school reform. The federal Perkins



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Career and Technical Education Act (Perkins), which was reauthorized in 2006, contains stronger links to academic improvement and accountability as well.

States are turning to CTE as a school improvement resource. For example, California—with unprecedented interest and support from government, business, and industry leaders—is rebuilding its CTE system. Their interest has placed CTE at the forefront of the state's education and workforce agenda. Governor Arnold Schwarzenegger and other government leaders have worked to reverse the underfunding of CTE. High school CTE course work is being reformed through partnerships with community colleges that increase coordination with high schools, improve the quality and quantity of courses in high-growth and emerging industry sectors, and boost the number of CTE courses that meet the state's university system entrance requirements. Other priorities include expanding the number of California Partnership Academies, which combine rigorous academics with a career focus, and creating more integrated courses that combine CTE with math, science, or English.

Arizona has made academic content explicit in CTE courses, and CTE teachers understand and teach to the state's academic standards; Kentucky has developed 10 "interdisciplinary courses" that enable students to meet academic course requirements by taking classes that carefully merge academic standards with career-oriented content. A number of states are planning to use a portion of federal Perkins funds to support implementation of the Math-in-CTE project, facilitated by the National Research Center for CTE. This project will provide professional development for CTE and math teachers to help them identify math content that is embedded in CTE courses and create lesson plans for teaching the academic content in the CTE course.

CTE has a positive effect on academic performance for all students. The 2004 *National Assessment of Vocational Education: Final Report to Congress* (U.S. Department of Education)

reported that occupational concentrators increased their 12th-grade test scores on the National Assessment of Educational Progress (NAEP) by about 8 scale points in reading and 11 points in math, but students who took few or no CTE courses increased their reading on NAEP by only 4 points and showed no improvement in math achievement. The Southern Regional Educational Board reported that students in schools that had highly integrated rigorous academic and CTE programs have significantly higher student achievement in reading, mathematics, and science than do students at schools that have less integrated programs (Bottoms, Presson, & Han, 2004).

Reducing the Drop-out Rate

Many students lose interest and motivation in education because the curriculum does not seem to have a real-world application. Academics are often presented in isolation, instead of in a way that spotlights how the subject is applicable in the real world. In *Dropping Out of High School and the Place of Career and Technical Education*, Plank, DeLuca, and Estacion (2005) reported that the risk of dropping out for students who entered high school at a normal or younger age decreased as they added CTE courses to their curriculum until they reached a ratio of taking one CTE course for every two academic courses. The report suggests that this mix of CTE and academic courses lowers the drop-out rate because the course balance offers students a broader array of experiences that can identify and encourage pathways to success.

Another study, conducted in 1998 by the University of Michigan, found that high-risk students are 8 to 10 times less likely to drop out in the 11th and 12th grades if they enroll in a CTE program instead of a general education program. The same study also reported that a quality CTE program can reduce a school's drop-out rate by as much as 6% and that CTE students are less likely than general education students to fail a course or to be absent (Kulik, 1998).

William H. Turner Technical Arts High School in Miami, FL, is proving the case for the role of CTE in dropout prevention with dropout rates that fall far below the average in the urban district. Turner Tech is a school of choice that recruits students who have demonstrated a strong interest in a technical area. Because of its history as an alternative school, however, many of its 1,800 students enroll because they have not been successful elsewhere. Despite their history, these students have been able to succeed at Turner Tech because of the small learning communities within Turner Tech's career academy model—which give students more personalized attention and provide valuable career exploration opportunities—and the team of professionals that steps in to provide support when a student is at risk of failing or dropping out.

In addition to their classroom work, Turner Tech students participate in hands-on experi-

ences in the workplace. During their junior and senior years, students participate in a work experience, mentorship, community service, or internship program; they may also be placed in jobs that are related to their fields of study in the summer. Through business advisory committees, members of the business community interact with students, who receive added insight and positive adult interaction.

Secondary-Postsecondary-Career Links

One of the highlights of Perkins is the requirement that states develop and implement "career and technical programs of study," an activity that some states were already undertaking. These programs of study are defined and referenced throughout the act and are intended to seamlessly link a student's entire secondary and postsecondary education experience. States must develop the programs of study in

See What States Are Doing

Current state career and technical education (CTE) systems are constantly changing to meet the needs of students and employers in the 21st century. Although these dynamic systems have historically provided support and guidance regarding careers, many also lead education and workforce innovations by initiating reform efforts, easing the transitions along a student's educational and career pathway, and blurring the lines between CTE and traditional academic instruction.

The State Profiles project (www.acteonline.org/resource_center/state_profiles.cfm) was created by the Association for Career and Technical Education to provide information about the wide array of CTE systems in the United States. General information includes:

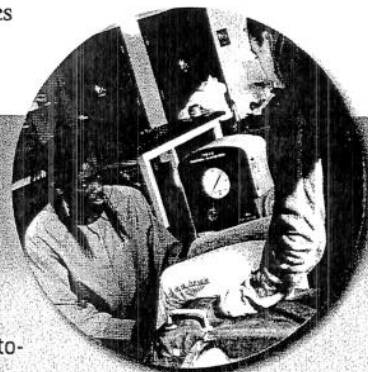
- Content from interviews with state CTE leaders
- Perkins implementation plans for each state
- Links to federal, state, and local education and CTE Web sites.

Each state's profile has been thoroughly researched and contains links to additional information and material.

Each profile is reviewed by the state CTE leaders to ensure that it contains the most accurate and up-to-date information on:

- Key CTE contacts within the state
- State funding for CTE
- State initiatives from the governor and other education officials
- State standards for CTE
- Academic integration of CTE classes
- High school reform, including career academies
- Career clusters and articulation agreements.

Eventually, all 50 states will be profiled and the information in the profile will be edited and updated as necessary. Customized reports can be developed on specific topics or entities. For more information, please contact Jason Kiker at jkiker@acteonline.org.





consultation with local institutions so that they may be offered by each local school district and community or technical college receiving Perkins funds.

Programs of study are very similar to and build on positive ini-

tatives—such as career pathways, career academies, and career clusters—that are already underway in CTE programs across the nation. In many states, the foundational elements of programs of study are already in place. For example, career pathways in Kentucky start in grade 9 and include a coherent sequence of academic and CTE courses in broad career areas. Also, since 2002, Kentucky students have been required to complete an individual graduation plan that emphasizes academic and career development that are based on student interests and provides a pathway for students through high school to postsecondary education and the workplace.

The national career clusters movement developed by the States' Career Clusters Initiative (SCCI) has developed 16 career clusters that serve as launching points for many states' programs of study. SCCI has sample plans of study that include a sequenced list of academic and career-related courses that connect students' high school and postsecondary educational experiences. In 80% of states, supporting effective transitions between secondary and postsecondary education has been a key impetus behind the implementation of career clusters.

CTE programs often lead the way to establishing secondary-postsecondary links through career programs and dual and concurrent enrollment, and new initiatives are continually being launched. For example, Virginia has initiated an articulation agreement between Virginia's 23 community colleges and the Virginia Department of Education that allows graduates of Virginia public high schools who have completed the Business and Information

Technology-Interactive Media CTE program to move into associate of applied science or associate of science degree programs in information technology at community colleges without duplicating instruction or testing. This agreement initially targets specific Web technologies and computer information systems courses and will guide the development of high school-to-community college articulation pathways in other CTE areas.

Initiatives similar to Virginia's are not unusual. CTE's close relationship with business and industry and the fact that courses are delivered in secondary and postsecondary institutions, as well as work situations such as internships, has created fertile ground for such ventures. For example, at Turner Tech, students' interest in postsecondary education is encouraged, and beginning in their junior years, students have the opportunity to participate in college courses at Miami-Dade Community College. As part of a capstone program, students complete a project in grade 11, in which they are assigned a mentor, research a problem, and come up with a hypothesis and a solution. In their senior years, students must complete an exhibition that requires them to interview for a job and display their portfolios for members of the business advisory committees.

Preparing Today's Workforce

Economic competitiveness is at the forefront of the national policy debate, and federal, state, and local leaders are examining ways to keep the United States at the top of innovation activities as other nations make technological and economic gains. When Congress passed Perkins, they identified a new purpose for it: "Providing individuals with opportunities throughout their lifetimes to develop, in conjunction with other education and training programs, the knowledge and skills needed to keep the United States competitive."

CTE is meeting Perkins's purpose through a variety of career training options. A 2005 Skills Gap Report indicates a moderate to severe shortage of qualified skilled production

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employees, including frontline workers, such as machinists, operators, craft workers, distributors, and technicians. In addition to those types of employment, today's CTE programs prepare students for many new career offerings that did not exist a few years ago, and many students are enrolling on career paths that may eventually lead to advanced degrees in fields such as engineering, science, health care, and technology.

In addition to academic knowledge and technical skills, employment in the 21st century requires workers to possess "soft skills." The National Association of Manufacturers (NAM) reports that many employees do not have basic employability habits, such as good attendance, timeliness, and work ethics, and 46% reported that employees have

inadequate problem-solving skills. In addition to linking directly to the technical skills that employers require, CTE programs teach the soft skills that students need to excel in their jobs.

Career and technical student organizations (CTSOs) engage students in cocurricular activities that are closely related to CTE classroom programs. Students regularly work with an adult adviser to prepare for local, regional, and national competitions; take on student leadership roles in the organizations; and develop a range of project management, public speaking, and leadership skills. A recent study found that CTSO activities positively affect students' academic engagement, and the stronger the student's involvement, the better the results.

Project Lead the Way is one example of a not-for-profit organization that promotes pre-engineering courses for middle and high school students in schools across the country.

At Cleveland (TN) High School, the Project Lead the Way Pre-engineering-Technology Program helps students explore engineering-technology and biotechnology careers and prepares them for two- or four-year postsecondary engineering-technology programs. Each course uses state-of-the-art technology and is taught in a laboratory environment that includes projects, lectures, guest speakers, and field trips. Students may earn college credit through special agreements with local and state colleges and universities. More than 200 students are enrolled in engineering courses at Cleveland.

Often, CTE is overlooked and not fully utilized despite its potential to engage students in schools, improve academic performance, facilitate postsecondary transitions, and prepare students for the workplace. Look at the possibilities that CTE offers your school as you seek school improvement options. PL

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